

## Fig. 1-1

SEQ ID NO:1

GTTCAAGAATCAGTTTTCTTTTTATAAGGGCTAAAATCAGTTATTTTTGGCTTTTTTACCCCATATTGTAGGGTG  
GATCTCGAAAGATATGAAAGATCTCCCTCCAAGCCGTACATACGACTTTCATCGAATACGGCTTCCGCAGAAT  
TCTATATGTATCTATGAGATCGAGTATGGAATTCGTGTTACTCACTTTAAATTGAGTATCCGTTCCCTCCTTT  
TCCTGCTAGGATTGGAATCCTGTATTTTACATATCCATACGATTGAGTCCTTGGGTTTCCGAAATAGTGTA  
AAGAAGTGCTTCAAATCATTGCTATTTGACTCGGACCTGTTCTAAAAAGTCGAGGTATTTGGAATTGTTTGTG  
ACACGGACAAAGTCAGGGAAAACCTCTGAAATTTTTCAATATTGAACCTTGGACATATAATAGTTCGGAATCG  
AATCTCTTTAGAAAGAAGATCTTTTGTCTCATGGTAGCCTGCTCCAGTCCCCTTACGAAACTTTCGTTATTGGG  
TTAGCCATACACTTCACATGTTTCTAGCGATTACATGGCATCATCAAATGATACAAGTCTTGGATAAGAATCT  
ACAACGCACTAGAACGCCCTTGTGACGATCCTTTACTCCGACAGCATCTAGGGTTCCCTCGAACATGTGATAT  
CTCACACCGGGTAAATCCTTAACCTCCCCCTCTTACTAAGACTACAGAATGTTCTTGTGAATTATGGCCAAT  
ACCGGGTATATAAGCAGTGATTTCAAATCCAGAGGTTAATCGTACTCTGGCAACTTTACGTAAGGCAGAGTTTG  
GTTTTTTTGGGGTGATAGTGGAAAAGTTGACAGATAAGTCACCCCTTACTGCCACTCTACAGAACCCTACATGAG  
ATTTTCACCTCATACGGCTCCTCGTTCAATTCTTTCGAAGTTATTGGATCCTTTTCCGCGTTCGAGAATCCCC  
CCCTTTCTCCACTCCGTCGCGAAGAGTAAGTAGGACCAATTTAGTCACGTTTTTCATGTTTCCAATTGAACACTTT  
CCGTTTTTGTATTCTCTTTACCAAACATATGCGGATCCAATCACGATCTTATAATAAGAACAAGAGATCTTT  
CTCGATCAATCCCCTTGCCCTCATTCTTCGAGAATCAGAAAGATCCTTTTCAAGTTTGAATTTGTTCAATTTGG  
AATCTGAGTTCTTCTACTTCATTATTTATTTAATATCAATATTTTTGCCTCTCTTTTTTTTATATTATTCCTTA  
AGTCCCATAGGTTTGATCCTTTAGAATTGGACTCATTTTCTCATTGAGCGAAGGGTACGAAATAAATCAGATTG  
ATTAAAGCACTATGTGAAATATTCCGTTTTTTCTCTTCTCTATCCCATAGGTACAGTGTGTAATCAATCG  
AGAACCTTTTCTTCTGTCTGAATCGATATTATCCATTCCAATTCCTTCCGATACCTCTCAAGGAAAATCTCG  
AATTGGATCCTAAATTGACGGGTTAGTGTGAGCTTATCCATGCGGTTATGCACTCTTCGAATAGGAATCCATTT  
TCTGAAAGATCCTGGCTTTCTGTGCTTTGGTGGGTCTCCGAGATCCTTTTCGATGACCTATGTTGTGTTTGTGAA  
GGGATATCTATATAATACGATCGATTGCGTAAAGCCCGCGGTAGCAGTGGAACCGGGGAAAGTATACAGAAAAG  
ACAGTTCTTTTCTATTATATATTATATTAGTCTTTTCTATTTAATTCAATATTAGATTAGTCTTAGTTAGTGATC  
CCGGCTTAGTGAGTCCTTTCTTCCGTGATGAAGTGTGGCGCCAGTCCTACATTTTGTCTCTGTGGACAGAGGA  
GAAAGGGGGCTCCGCGGGAAGAGGATTGTACCGTGAGAGAAGCAAGGAGGTCAACCTCTTTCAAATATACAACA  
TGGATTCTGGCAATGCAATGTACTTGGACTCTCATGTGATCCGAATGAATCATCCTTTCCACGGAGGCAAATC  
TTTGCTGTAGGTAAACAGGATAGCAAGTTACAACTCTGTCTCGGTAGGACATGGATCTCTATTACTATGAAT  
TTCATAAATGAAGTAGTGAATGTTGGGTTACCAATATCCTTTTTTGTAGTGACGAATCCTGTTGTGTTCTTAA  
GAAAAGGAATTTGTACATTTTTCGGGATCTCAAAGGAGCGTGGAACACATAAGAACTCTTGAATGGAAATGGA  
AAAGAGATGGAATCCAGTTCCCTTCGGAATGGTAAGATCTTTGGCGCAAAAAAGGGGTTGATCCGTATCATC  
TTGACTTGGTCTGCTTCTCTATTTTTTAATAATACCGGGTCCGGTCTTCTCTACCGTATCGAATAGAA  
CACGCTGAGCCAAATCTTCTCATGTAAACCTGCTTGATTTAGATCGGGAAAATCGTGTGGTTTTATGAAACC  
ATGTGCTATGGCTCGAATCCGTAGTCAATCCTATTTCCGATAGGGACAGTTGACAACCTGAATCCTATTTTCCCA  
TTATTTTCATATCCGTAATAGTGCGAAAAAAGATTAATTAAGGCGCGCCAGGCCCGGCCCAAGTTGTTCAA  
GAATAGTGTGTTGAGTTTCTCGACCTTTGCCCTTAGGATTAATCAGTTCTATTTCTCGATGGGGGCAGGGAAG  
GGATATAACTCACCGGTAGAGTGTACCCCTTGACGTGGTGGAAGTCATCAGTTTCGAGCCTGATTATCCCTAAAC  
CCAATGTGAGTTTGTATTTTGTATTTGCTACCCCGCCGTGATTGAATGAGAATGGATAAGAGGCTCGTGGGAT  
TGACGTGAGGGGGCAGGGATGGCTATATTCTGGGAGCGAATCCGGGCGAATATGAAGCGCATGGATACAAGT  
TAGGCCTTGGAATGAAAGACAATTCGGAATCCGCTTTGTCTACGAACAAGGAAGCTATAAGTAATGCAACTATG  
AATCTCATGGAGAGTTCGATCCTGGCTCAGGATGAACGCTGGCGGCATGCTTAACACATGCAAGTCGGACGGGA  
AGTGGTGTTCAGTGGCGGACGGGTGAGTAACGCGTAAGAACCTGCCCTTGGGAGGGGAACAACAGCTGGA  
CGGCTGCTAATACCCGTAGGCTGAGGAGCAAAAGGAGGAATCCGCCCCAGGAGGGGCTCGCGTCTGATTAGCT  
AGTTGGTGAGTAAGCTTACCAAGGCGATGATCAGTAGTCCGTCGAGAGGATGATCAGCCACACTGGGACT  
GAGACACGGCCAGACTCCTACGGGAGGCAGCAGTGGGGAATTTCCGCAATGGGCGAAAGCCTGACGGAGCAA  
TGCCGCGTGGAGGTAGAAGGCCACGGGTGATGAATCTTTTCCCGGAGAAGAAGCAATGACGGTATCTGGGG  
AATAAGCATCGGCTAACTCTGTGCCAGCAGCCGCGTAATACAGAGGATGCAAGCCTTATCCGGAATGATTGGG  
CGTAAAGCGTCTGTAGGTGGCTTTTTAAGTCCGCCGTCAAATCCCAGGGCTCACTCTGGACAGGCGGTGGA  
CTACCAAGCTGGAGTACGGTAGGGGACAGGGGAATTTCCGGTGGAGCGGTGAATGCGTAGAGATCGGAAAGAA  
CACCAACGGCCAAAGCACTCTGCTGGGCCACACTGACACTGAGAGACGAAAGCTAGGGGAGCGAATGGGATTA

## Fig. 1-2

(continued)

GATACCCAGTAGTCCTAGCCGTAAACGATGGATACTAGGCGCTGTGCGTATCGACCCGTGCAGTGCTGTAGCT  
AACGCGTTAAGTATCCCGCCTGGGGAGTACGTTGCAAGAATGAAACTCAAAGGAATTGACGGGGGCCGCACA  
AGCGGTGGAGCATGTGGTTTAATTCGATGCAAAGCGAAGAACCTTACCAGGGCTTGACATGCCGCGAATCCTCT  
TGAAAGAGAGGGGTGCCTTCGGGAACGCGGACACAGGTGGTGCATGGCTGTCGTCAGCTCGTGCCGTAAGGTGT  
TGGGTTAAGTCCCGCAACGAGCGCAACCCTCGTGTTTAGTTGCCATCATTGAGTTTGGAACCTGAACAGACTG  
CCGGTGATAAGCCGGAGGAAGGTGAGGATGACGTCAAGTCATCATGCCCCTTATGCCCTGGGCGACACACGTGC  
TACAATGGCCGGGACAAAGGGTCGCGATCCCGCGAGGGTGAGCTAACCCCAAAAACCCGTCCTCAGTTCGGATT  
GCAGGCTGCAACTCGCCTGCATGAAGCCGGAATCGCTAGTAATCGCCGGTCAGCCATACGGCGGTGAATCCGTT  
CCCGGGCCTTGTAACACCGCCCGTCACACTATGGGAGCTGGCCATGCCCGAAGTCGTTACCTTAACCGCAAGG  
AGGGGGATGCCGAAGGCAGGGCTAGTGACTGGAGTGAAGTCGTAACAAGGTAGCCGTACTGGAAGGTGCGGCTG  
GATCACCTCCTTTTCAGGGAGAGCTAATGCTTGTTGGGTATTTTGGTTTGACACTGCTTCACACCCAAAAAGA  
AGGGAGCTACGTCTGAGTTAAACTTGGAGATGGAAGTCTTCATTTGTTTCTCGACAGTGAAGTAAGACCAAG

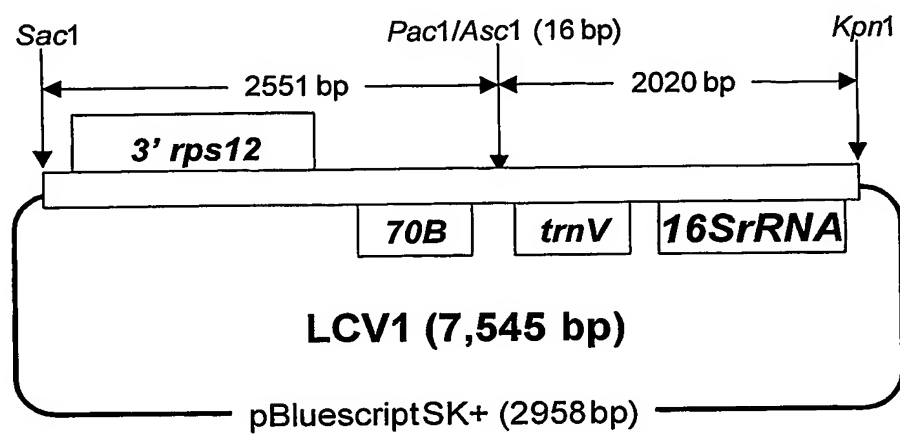


Fig. 2

## Fig. 3-1

LCV1 (SEQ ID NO:2): 1 gttcaagaatcagttttctttttataagggtctaaatcacttattttggcttttttacc 60  
 |||  
 tobac (SEQ ID NO:3): 100021 gttcaagaatcagttttctttttataagggtctaaatcacttattttggcttttttacc 100080  
 ribosomal protein S12 80 ^^^ K P K K V G  
 (SEQ ID NO:41)

LCV1: 61 catattgtagggtggatctcgaaagatatgaaagatctccctccaagccgtacatacgac 120  
 |||  
 tobac: 100081 catattgtagggtggatctcgaaagatatgaaagatctccctccaagccgtacatacgac 100140  
 ribosomal protein S12 78 Y K~

LCV1: 121 tttcatcgaatacggctttccgcagaattctatatgtatctatgagatcgagatggaat 180  
 |||  
 tobac: 100141 tttcatcgaatacggctttccgcagaattctatatgtatctatgagatcgagatggaat 100200  
 ribosomal protein S12 1 ~

LCV1: 181 tctgtttactcactttaaattgagtatccgtttccctccttttctgctaggttggaat 240  
 |||  
 tobac: 100201 tctgtttactcactttaaattgagtatccgtttccctccttttctgctaggttggaat 100260  
 ribosomal protein S12 1 ~

LCV1: 241 tcctgtattttacatatccatacgattgagtccttgggtttccgaaatagtgtaaaaaga 300  
 |||  
 tobac: 100261 tcctgtattttacatatccatacgattgagtccttgggtttccgaaatagtgtaaaaaga 100320  
 ribosomal protein S12 1 ~

LCV1: 301 agtgcttcaaatcattgctatttgactcggacctgttctaaaaa-gtcgaggtatttcga 359  
 |||  
 tobac: 100321 agtgcttcaaatcattgctatttgactcggacctgttctaaaaaagtcgaggtatttcga 100380  
 ribosomal protein S12 1 ~

LCV1: 360 attgtttgttgacacggacaaagtcagggaacacctctgaaatttttcaatattgaacc 419  
 |||  
 tobac: 100381 attgtttgttgacacggacaaagtcagggaacacctctgaaatttttcaatattgaacc 100440  
 ribosomal protein S12 1 ~

LCV1: 420 ttggacatataatagttccgaatcgaatctctttagaagaagatctttgtctcatggt 479  
 |||  
 tobac: 100441 ttggacatataagagttccgaatcgaatctctttagaagaagatctttgtctcatggt 100500  
 ribosomal protein S12 1 ~

LCV1: 480 agcctgctccagtcaccttacgaaactttcggtattgggttagccatacacttcacatgt 539  
 |||  
 tobac: 100501 agcctgctccagtcaccttacgaaactttcggtattgggttagccatacacttcacatgt 100560  
 ribosomal protein S12 1 ~

LCV1: 540 ttctagcgattcacatggcatcatcaaatgatacaagtccttgataagaatctacaacgc 599  
 |||  
 tobac: 100561 ttctagcgattcacatggcatcatcaaatgatacaagtccttgataagaatctacaacgc 100620  
 ribosomal protein S12 1 ~

LCV1: 600 actagaacgcccttggtgacgatcctttactccgacagcatctagggttcctcgaacaat 659  
 |||  
 tobac: 100621 actagaacgcccttggtgacgatcctttactccgacagcatctagggttcctcgaacaat 100680  
 ribosomal protein S12 59 ~ S R G Q Q R D K V G V A D L T G R V I

## Fig. 3-2

(continued)

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LCV1:          660      gtgatatctcacaccgggtaaatccttaaccctccccctcttactaagactacagaatg 719
                  |||
tobac:         100681   gtgatatctcacaccgggtaaatccttaaccctccccctcttactaagactacagaatg 100740
ribosomal protein S12 39      H Y R V G P L D K V R G G R V L V V S H

LCV1:          720      ttcttgatgaattatggccaataccgggtatataagcagtgatttcaaatccagagggttaa 779
                  |||
tobac:         100741   ttcttgataattatggccaataccgggtatataagcagtgatttcaaatccagagggttaa 100800
ribosomal protein S12 19      E Q L N H G I G P I Y A T I E F G S T L

LCV1:          780      tcgtactctggcaactttacgtaaggcagagtttggttttttgggggtgatagtggaataa 839
                  |||
tobac:         100801   tcgtactctggcaactttacgtaaggcagagtttggttttttgggggtgatagtggaataa 100860
ribosomal protein S12 1      R V R A V K R L A S N P K K P T I T

LCV1:          840      gttgacagataagtcacccttactgccactctacagaaccgtacatgagattttcacctc 899
                  |||
tobac:         100861   gttgacagataagtcacccttactgccactctacagaaccgtacatgagattttcacctc 100920

LCV1:          900      atacggctcctcggttcaattctttcgaagttattggatcctttccgcgttcgagaatcc 959
                  |||
tobac:         100921   atacggctcctcggttcaattctttcgaagttattggatcctttccgcgttcgagaatcc 100979

LCV1:          960      cctcccttcttccactccgtcccggaagagtaactaggaccaattagtcacgttttcatg 1019
                  ||
tobac:         100980   cc-cccttcttccactccgccccgaagagtaactaggaccaattagtcacgttttcatg 101038

LCV1:          1020     ttccaattgaacactttccggtttt-----
                  |||
tobac:         101039   ttccaattgaacactgtccatttttgattattctcaaaggataa 101082

LCV1: 1045      gattattctctttaccaaacatatgcggatccaatcacgatcttata---ataagaaca 1100
                  |||
tobac: 101083   gattattctctttaccaaacatatgcggatccaatcacgatcttatatataagaagaaca 101142

LCV1: 1101      agagatctttctcgatcaatcccttgccctcattcttcgagaatcagaaagatccttt 1160
                  |||
tobac: 101143   aaagatctttcttgatcaatcccttgccctcattcttcaagaataaggaagatccttt 101202

LCV1: 1161      tcaagtttgaatttggttcatttggaatctgagttcttctacttcattatttatttaatat 1220
                  |||
tobac: 101203   tcaagtttgaatttggttcatttggaatctgggttcttctacttcattatttatttaatat 101261

LCV1: 1221      caatatttttgctctcttttttttatattattccttaagtcccataggtttgatccttt 1280
                  |||
tobac: 101262   gaatattttc-cctctcttttttttatatcattccttaagtcccataggtttgatcctgt 101320

LCV1: 1281      agaattggactcattttctcattgagcgaagggtacgaaataaatcagattgattaaaag 1340
                  |||
tobac: 101321   agaattgaccattttctcattgaacgaaagggtacgaaataaatcagattgat-aaaag 101379

```

**Fig. 3-3**

(continued)

LCV1:	1341	cactatgtgaaatattcgggtttt-----tcctcttcctctatcccataggt-----aca	1390
tobac:	101380	taccatgtgaaatcttcgggttttcccccttcctcgatccctatcccataggttaggtaca	101439
LCV1:	1391	gtgtttgaatcaatcgagaaccttttcttctgtctgaatcgatattattccattccaatt	1450
tobac:	101440	gtgtttgaatcaatagagaaccttttcttctgtatgaatcgatattattccattccaaat	101499
LCV1:	1451	ccttcccgatacctctcaaggaaaatctcgaatt-ggatccctaaattgacgggttagtgt	1509
tobac:	101500	ccttcccgatacctcccaaggaaaatctcgaatttgatcccaaattgacgggttagtgt	101559
LCV1:	1510	gagcttatccatgcggttatgcactcttcgaataggaatccattttctgaaagatcctgg	1569
tobac:	101560	gagcttatccatgcggttatgcactctttgaataggaatccggttttctgaaagatcctgg	101619
LCV1:	1570	ctttcgtgctttggtgggtctccgagatcctttcgatgacctatgttgtgtttgttgaag	1629
tobac:	101620	ctttcgtactttggtgggtctccgagatcctttcgatgacctatg-----ttgaag	101670
LCV1:	1630	ggatatctatataatacgcgattgcgtaaagcccgcggttagcagtggaaccgggggaaa	1689
tobac:	101671	ggatatctatctaatacgcgattgcgtaaagcccgcggttagcaacggaaccgggggaaa	101730
LCV1:	1690	gtatacagaaaagacagtttcttttctattatat	1722
tobac:	101731	gtatacagaaaagacagtttcttttctattatat	101763
LCV1:	1723	attatattagtccttttctatttaattc	1749
tobac:	101764	tagta	ttttctattatattaagatatattagactatt 101799
LCV1:	1750	atattagattagtccttagtttagtgatcccggttagtgagtcctttcttcctgtagaac	1809
tobac:	101800	atattagattagttattagtttagtgatcccgacttagtgagtc-----tgatgaat	101849
LCV1:	1810	tgttggcgccagtcctacattttgtctctgtggacagaggagaaaaggggctccgcggga	1869
tobac:	101850	tgttggcaccagtcctacattttgtctctgtggaccgaggagaaaaggggctccgcggga	101909
LCV1:	1870	agaggattgtaccgtgagagaagcaaggaggtcaacctctttcfaatatacaacatggat	1929
tobac:	101910	agaggagtgtaccatgagagaagcaaggaggtcaacctctttcfaatatacaacatggat	101969
hypothetical protein	127		^^^ I Y L M S
(SEQ ID NO:4)			
LCV1:	1930	tctggcaatgcaatgtacttggactctcatgtcgatccgaatgaatcatcctttccacgg	1989
tobac:	101970	tctggcaatg-----tagttggactctcatgtcgatccgaatgaatcatcctttccacgg	102024
hypothetical protein	123	E P L T	T P S E H R D S H I M R E V S

## Fig. 3-4

(continued)

LCV1: 1990 aggc aaatctttgcctgtaggtaacaggatagcaagttacaaactctgtctcggttagga 2049  
|||||  
tobac: 102025 aggtaaatctttgcctgtaggcaagaggatagcaagttccaaattctgtctcggttagga 102084  
hypothetical protein 88 T F R Q R S P L L I A L E L N Q R P L V

LCV1: 2050 catggatctctattactatgaatttcataaatgaagtagtgaatgggtgggttaccatta 2109  
|||||  
tobac: 102085 catgtatttctattactatgaaattcataaatgaagtagttaatggtagggttaccatta 102144  
hypothetical protein 1 M K F I N E V V N G R V T I  
(SEQ ID NO:5)  
hypothetical protein 68 H I E I V I F N M F S T T L P L T V M I

LCV1: 2110 tcctttttgtagtgacgaatcctgtatgtgttcctaagaaaaggaattgtacatttttc 2169  
|||||  
tobac: 102145 tcctttttgtagtgacgaatcctgtatgtgttcctaagaaaaggaattgtccatttttc 102204  
hypothetical protein 15 I L F V V T N L V C V P K R N L S I F  
hypothetical protein 48 R K T T V F R T H T G L F L F K D M K R

LCV1: 2170 gggatctcaaaggagcgtggaaacacataagaactcttgaatggaaatggaaaagagatg 2229  
|||||  
tobac: 102205 ggggtctcaaaggggcgtggaaacgcataagaactcttg-----aatggaaaagagatg 102258  
hypothetical protein 35 R G L K G A W K R I R T L E W K R D  
hypothetical protein 35 P R L P A H F R M L V R S H F L S T

LCV1: 2230 gaactccagttccttcggaaatggtaagatctttggcgcaaaaaaaggggttgatccgta 2289  
|||||  
tobac: 102259 taactccagttccttcg----- 102275  
hypothetical protein 24 V G T G E  
hypothetical protein 53 V T P V P S

LCV1 2290 tcattcttgacttggttctgtctcctctatttttttaataataaccgggtcggttcttctc 2349  
Tobac: -----

LCV1 2350 ctacccgtatcgaaatagaacacgctgagccaaatcttcttcatgtaaaacctgcttgatt 2409  
Tobac: -----

LCV1 2410 tagatcgggaaaatcggtggttttatgaaaccatgtgctatggctc 2456  
Tobac: -----

LCV1: 2457 gaatccgtagtcaatcctattttccgatagggacagttgacaactgaatcctatttt-ccc 2515  
|||||  
tobac: 102276 gaatcggtagtcaatcctattttccgatagggcagttgacaattgaatccgattttgacc 102335  
hypothetical protein 6 S D T T L G I E S L P L Q C N F G I K V  
hypothetical protein 59 E S V V N P I S D R G S ^^^

LCV1: 2516 attattttcatatccgtaatatgtagcgcaaaaaaagatttaattaggcgcgcc 2567  
|||||  
tobac: 102336 attattttcatatccgtaatatgtagcgcaaaaga----- 102367  
hypothetical protein 1 M I K M

PacI/AscI

LCV1:	2568	aggcccgcccccaggttggttcaagaatagtgctggtgagtttctcgacctttgccttag	2627
tobac:	102368	aggcccggtccaagttggttcaagaatagtggtggtgagtttctcgacctttgacttag	102427
LCV1:	2628	gattaatcagttctatttctcgatgggggcaggggaagggatataactcaccggtagagtg	2687
tobac:	102428	gattagtcagttctatttctcgatgggg-cggggaagggatataactcagcggtagagtg	102486
LCV1:	2688	tcaccttgacgtgggtggaagtcacagttcgagcctgattatccctaaacccaatgtga	2747
tobac:	102487	tcacc-ttgacgtgggtggaagtcacagttcgagcctgattatccctaagcccaatgtga	102545
LCV1:	2748	gttttgataattttgatttgctaccccgccgtgattgaatgagaatggataagaggctcgt	2807
tobac:	102546	gtttttctagttggatttgctcccccgccgtcgttcaatgagaatggataagaggctcgt	102605
LCV1:	2808	gggattgacgtgagggggcagggatggctatatatttctgggagcgaactccgggcgaatat	2867
tobac:	102606	gggattgacgtgagggggcagggatggctatatatttctgggagcgaactccgggcgaatat	102665
LCV1:	2868	gaagcgcacatggatacaagtttaggccttggaatgaaagacaattccgaatccgctttgtct	2927
tobac:	102666	gaagcgcacatggatacaagttatgccttggaatgaaagacaattccgaatccgctttgtct	102725
LCV1:	2928	acgaacaaggaagctataagtaaatgcaactatgaatctcatggagagttcgatcctggct	2987
tobac:	102726	acgaacaaggaagctataagtaaatgcaactatgaatctcatggagagttcgatcctggct	102785
LCV1:	2988	caggatgaacgctggcggcacgtgcttaacacatgcaagtcggacgggaagtgggtgttcca	3047
tobac:	102786	caggatgaacgctggcggcacgtgcttaacacatgcaagtcggacgggaagtgggtgttcca	102845
LCV1:	3048	gtggcgagcgggtgagtaacgcgtaagaacctgccctgggaggggaacaacagctggaa	3107
tobac:	102846	gtggcgagcgggtgagtaacgcgtaagaacctgccctgggaggggaacaacagctggaa	102905
LCV1:	3108	acggctgctaataacccgtaggctgaggagcaaaaggaggaatccgcccaggaggggct	3167
tobac:	102906	acggctgctaataacccgtaggctgaggagcaaaaggaggaatccgcccaggaggggct	102965
LCV1:	3168	cgcgtctgattagctagttggtgaggtaatagcttaccaaggcgatgatcagtagctggt	3227
tobac:	102966	cgcgtctgattagctagttggtgaggtaatagcttaccaaggcgatgatcagtagctggt	103025
LCV1:	3228	ccgagaggatgatcagccacactgggactgagacacggcccagactcctacgggaggcgag	3287
tobac:	103026	ccgagaggatgatcagccacactgggactgagacacggcccagactcctacgggaggcgag	103085
LCV1:	3288	cagtgggggaattttccgcaatggcgaaagcctgacggagcaatgcccggtggaggtaga	3347
tobac:	103086	cagtgggggaattttccgcaatggcgaaagc-tgacggagcaatgcccggtggaggtaga	103144



## Fig. 3-6

(continued)

LCV1: 3348 aggccacgggtcatgaacttcttttcccgagagaagaagcaatgacgggtatctggggaat 3407  
|||||  
tobac: 103145 aggccacgggtcgtgaacttcttttcccgagagaagaagcaatgacgggtatctggggaat 103204  
|||||

LCV1: 3408 aagcatcgggctaactctgtgccagcagccggttaatacagaggatgcaagcgttatccg 3467  
|||||  
tobac: 103205 aagcatcgggctaactctgtgccagcagccggttaatacagaggatgcaagcgttatccg 103264  
|||||

LCV1: 3468 gaatgattgggcgtaaagcgtctgtagggtggctttttaagtcgcgcgtcaaatcccagg 3527  
|||||  
tobac: 103265 gaatgattgggcgtaaagcgtctgtagggtggctttttaagtcgcgcgtcaaatcccagg 103324  
|||||

LCV1: 3528 ctcaactctggacagcggtggaaactaccaagctggagtacggtaggggcagagggaat 3587  
|||||  
tobac: 103325 ctcaacctggacagcggtggaaactaccaagctggagtacggtaggggcagagggaat 103384  
|||||

LCV1: 3588 ttccggtggagcggtgaaatgcgtagagatcggaagaacaccaacggccaaagcactct 3647  
|||||  
tobac: 103385 ttccggtggagcggtgaaatgcgtagagatcggaagaacaccaacggcgaaagcactct 103444  
|||||

LCV1: 3648 gctggggccacactgacactgagagacgaaagctaggggagcgaatgggattagataccc 3707  
|||||  
tobac: 103445 gctggggccacactgacactgagagacgaaagctaggggagcgaatgggattagataccc 103504  
|||||

LCV1: 3708 cagtagtcctagccgtaaacgatggatactaggcgctgtgcgtatcgaccctgcagtg 3767  
|||||  
tobac: 103505 cagtagtcctagccgtaaacgatggatactaggcgctgtgcgtatcgaccctgcagtg 103564  
|||||

LCV1: 3768 tgtagctaacgcgttaagtatcccgctggggagtagcttcgcaagaatgaaactcaaag 3827  
|||||  
tobac: 103565 tgtagctaacgcgttaagtatcccgctggggagtagcttcgcaagaatgaaactcaaag 103624  
|||||

LCV1: 3828 gaattgacgggggcccgcacaagcggtggagcatgtggtttaattcgatgcaaagcgaag 3887  
|||||  
tobac: 103625 gaattgacgggggcccgcacaagcggtggagcatgtggtttaattcgatgcaaagcgaag 103684  
|||||

LCV1: 3888 aaccttaccagggttgacatgccgcgaatcctcttgaaagagaggggtgccttcgggaa 3947  
|||||  
tobac: 103685 aaccttaccagggttgacatgccgcgaatcctcttgaaagagaggggtgccttcgggaa 103744  
|||||

LCV1: 3948 cgcggacacaggtggtgcatggctgtcgtcagctcgtgccgtaaggtgttggttaagtc 4007  
|||||  
tobac: 103745 cgcggacacaggtggtgcatggctgtcgtcagctcgtgccgtaaggtgttggttaagtc 103804  
|||||

LCV1: 4008 ccgcaacgagcgcaaccctcgtgttagttgccatcattgagtttgaaccctgaacaga 4067  
|||||  
tobac: 103805 ccgcaacgagcgcaaccctcgtgttagttgccatcattgagtttgaaccctgaacaga 103864  
|||||

LCV1: 4068 ctgccggtgataagccggaggaaggtgaggatgacgtcaagtcacatgccccttatgcc 4127  
|||||  
tobac: 103865 ctgccggtgataagccggaggaaggtgaggatgacgtcaagtcacatgccccttatgcc 103924  
|||||

## Fig. 3-7

(continued)

LCV1: 4128 ctggggcgacacacgtgctacaatggccgggacaaagggtcgcatcccgcgagggtgagc 4187  
|||||  
tobac: 103925 ctggggcgacacacgtgctacaatggccgggacaaagggtcgcatcccgcgagggtgagc 103984  
|||||

LCV1: 4188 taacccccaaaaacccgtcctcagttcggattgcaggctgcaactcgctgcatgaagccg 4247  
|||||  
tobac: 103985 taacccccaaaaacccgtcctcagttcggattgcaggctgcaactcgctgcatgaagccg 104044  
|||||

LCV1: 4248 gaatcgctagtaatcgccggtcagccatacggcggatgaatccgttcccgggccttgtaga 4307  
|||||  
tobac: 104045 gaatcgctagtaatcgccggtcagccatacggcggatgaatccgttcccgggccttgtaga 104104  
|||||

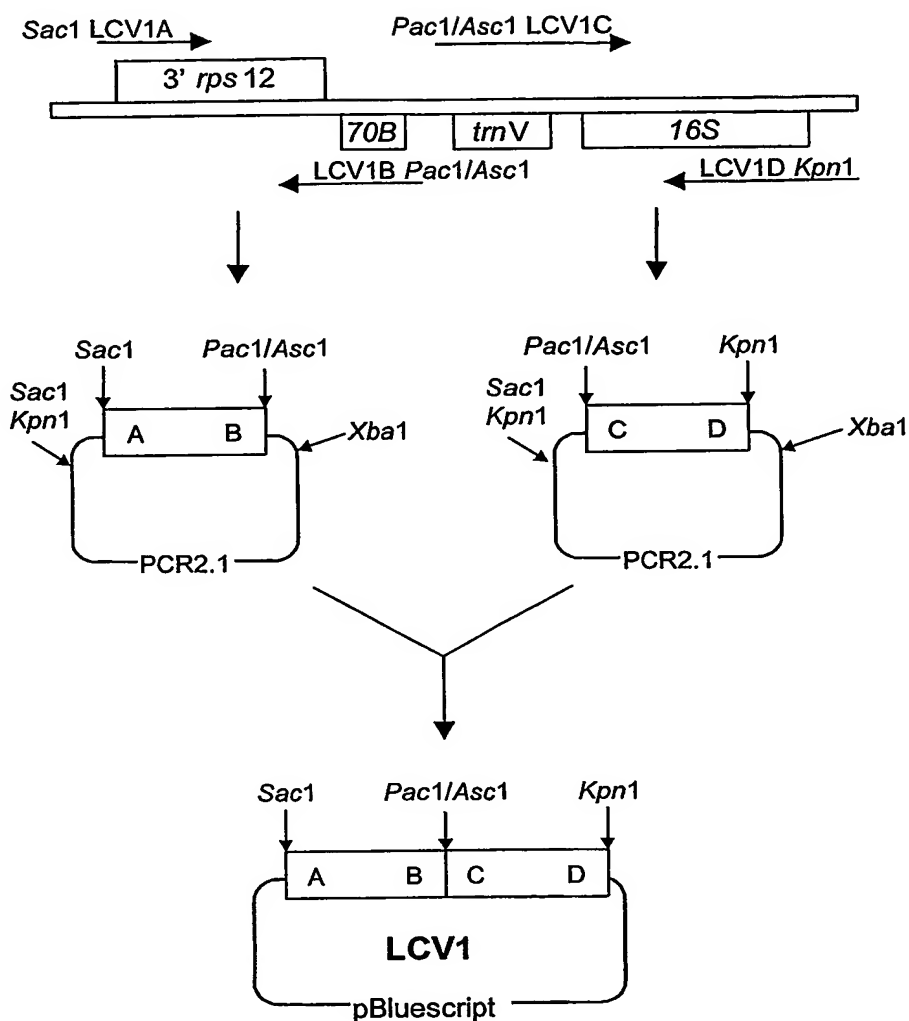
LCV1: 4308 caccgcccgtcacactatgggagctggccatgccgaagtcgttaccttaaccgcaagga 4367  
|||||  
tobac: 104105 caccgcccgtcacactatgggagctggccatgccgaagtcgttaccttaaccgcaagga 104164  
|||||

LCV1: 4368 gggggatgccgaaggcagggctagtactggagtgaagtcgtaacaaggtagccgtactg 4427  
|||||  
tobac: 104165 gggggatgccgaaggcagggctagtactggagtgaagtcgtaacaaggtagccgtactg 104224  
|||||

LCV1: 4428 gaaggtgcggctggatcacctccttttcagggagagctaatactgttgggtattttggt 4487  
|||||  
tobac: 104225 gaaggtgcggctggatcacctccttttcagggagagctaatactgttgggtattttggt 104284  
|||||

LCV1: 4488 ttgacactgcttcacaccc-----aaaaaagaagggagctacgtctgagttaaacttgag 4543  
|||||  
tobac: 104285 ttgacactgcttcacaccccccaaaaaaagaagggagctacgtctgagttaaacttgag 104344  
|||||

LCV1: 4544 atggaagtcttcatttcgtttctcgacagtgaagtaagaccaag 4587  
|||||  
tobac: 104345 atggaagtcttc-tttcctttctcgacggatgaagtaagaccaag 104387  
|||||



LCV1A-5' ATGAGCTCGTTCAAGAATCAGTTTTCTT3' (100021-100040 in TCG) (SEQ ID NO:6)

LCV1B-5' GCGCGCCTTAATTAACTTTTTTTTCGCACTATTACGGATAT3' (102345-102367 in TCG)

(SEQ ID NO:7)

LCV1C-5' TTAATTAAGGCGCGCCAGGCCCGGCCCAAGTT3' (102368-102384 in TCG) (SEQ ID NO:8)

LCV1D-5' ATGGTACCCTTGGTCTTACTTCACTGTCTGA3' (104366-104387 in TCG) (SEQ ID NO:9)

Fig. 4

## Fig. 5

SEQ ID NO:10

TCGACAGTGAAGTAAGACCAAGCTCATGAGCTTATTATCTCAGGTCGGAACAAGTTGATAGGATCCCCCTTTTT  
ACGTCCCCATGCCCCCTGTGTGGCGACATGGGGGCGAAAAAGGAAAGAGAGATGGGGTTTCTCTCGCTTTT  
GGCATAGTGGGCCCCAGTGGGGGGCTCGCACGACGGGCTATTAGCTCAGTGGGTAGAGCGCGCCCTGATAAT  
TGCGTTCGTTGTGCCTGGGCTGTGAGGGCTCTCAGCCACATGGATAGTTCAATGTGCTCATCGGCGCCTGACCC  
GAGATGTGGATCATCCAAGGCACATTAGCATGGCGTACTCCTCCTGTTCGAACCGGGGTTTGAAACCAAACTTC  
TCCTCAGGAGGATAGATGGGGCGATTCAGGTGAGATCCAATGTAGATCCAACCTTTCGATTCACTCGTGGGATCC  
GGGCGGTCCGGGGGGGACCACCATGGCTCCTCTCTTCTCGAGAATCCATACATCCCTTATCAGTGTATGGACAG  
CTATCTCTCGAGCACAGGTTTAGGTTTCGGCCTCAATGGGAAAAATAAATGGAGCACCTAACAACGCATCTTCAC  
AGACCAAGAACTACGAGATCACCCCTTTCATTTCTGGGGTGACGGAGGGATCATACCATTTCGAGCCTTTTTTTTT  
CATGCTTTTCCCCGAGGTCTGGAGAAAGCTGAAATCAATAGGATTTCCCTAATCCTCCCTTACCGAAAGGAAGA  
GCGTGAAATCTTTTTTCTTTCCGCGAGGGACCAGGAGATTGGATCTAGCCGTAAGAAGAATGCTTGGTATAAAT  
AACTCACTTCTTGGTCTTCGACCCCGCAGTCACTACGAACGCCCCGATCAGTGCAATGGGATGTGTCTATTT  
ATCTATCTCTTGAATCGAAATGGGAGCAGGTTTGAAAAAGGATCTTAGAGTGTCTAGGGTTGGGCCAGGAGGGT  
CTCTTAACGCCTTCTTTTTCTTCTCATCGGAGTTATTTACAAAGACTTGCCATGGTAAGGAAGAAGGGGGGA  
ACAGGCACACTTGGAGAGCGCAGTACAACGGAGAGTTGTATGCTGCGTTTCGGGAAGGATGAATCGCTCCCGAAA  
AGGAATCTATTGATTCTCTCCCAATTGGTTGGACCGTAGGTGCGATGATTTACTTCACGGGCGAGGTCTCTGGT  
TCAAGTCCAGGATGGCCCAGCTGCGCCAGGGAAAAGAATAGAAGAAGCGTCAGACTATTAATTAAGGCGCGCCC  
ATGCATGCTCCACTTGGCTCGGGGGGATATAGCTCAGTTGGTAGAGCTCCGCTCTTGCAATTGGGTCGTTGCGA  
TTACGGGTTGGATGTCTAATTGTCCAGGCGGTAATGATAGTATCTTGTACCTGAACCGGTGGCTCACTTTTTCT  
AAGTAATGGGGAAGAGGACCGAAACATGCCACTGAAAGACTCTACTGAGACAAAGATGGGCTGTCAAGAACGTC  
AAGAACGTAGAGGAGGTAGGATGGGCAGTTGGTCAGATCTAGTATGGATCGTACATGGACGGTAGTTGGAGTCG  
GCGGCTCTCCTAGGGTTCCCTTATCGGGGATCCCTGGGGAAGAGGATCAAGTTGGCCCTTGCGAACAGCTTGAT  
GCACTATCTCCCTTCAACCCTTTGAGCGAAATGCGGCAAAAGGAAGGAAAATCCATGGACCGACCCCATCTCT  
CCACCCCGTAGGAACCTACGAGATTACCCCAAGGACGCCCTTCGGCATCCAGGGGTACGGACCGACCATAGAACC  
CTGTTCAATAAGTGGAACGCATTAGCTGTCCGCTCTCAGGTTGGGCAGTAAGGGTCGGAGAAGGGCAATCACTC  
ATTCTTAAACCAGCGTTCTTAAGGCCAAAGAGTCGGCGGAAAAGGGGGGAAAGCTCTCCGTTCCCTGGTTTCCT  
GTAGCTGGATCCTCCGGAACCACAAGAATCCTTAGTTAGAATGGGATTCCAACTCAGCACCTTTTGAGTGAGAT  
TTTGAGAAGAGTTGCTCTTTGGAGAGCACAGTACGATGAAAGTTGTAAGCTGTGTTTCGGGGGGGAGTTATTGTC  
TATCGTTGGCCTCTATGGTAGAATCAGTCGGGGGACCTGAGAGGCGGTGGTTTACCTGCGGCGGATGTCAGCG  
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TTGGCGGTTTCGATCTATGATTTATCATTCATG

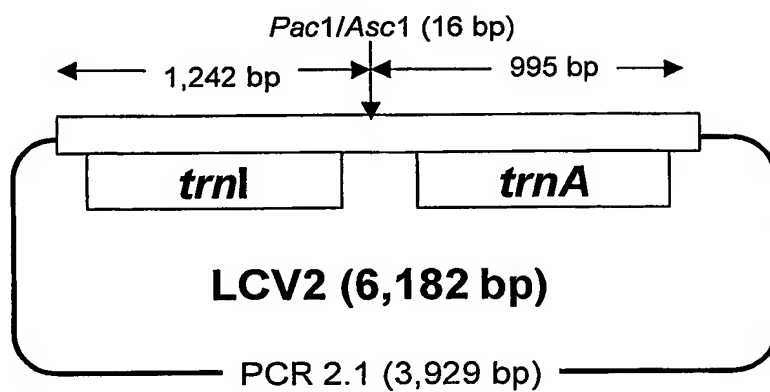


Fig. 6

atctcccttaccgaaaggaagagcgtgaaattctttttcctttccgcaggggaccaggagattggatctagccgtaagaagaatgcttg  
gtataaataactcacttcttggtcttcgacccccgcagtcactacgaacgccccgatcagtgcaatgggatgtgtctatttatctatc  
895  
(231 bp present in lettuce maize, rice and soybean but not tobacco)

## Fig. 7-2

(continued)

LCV2 : 896 tcttgactcgaaatgggagcaggttgaaaaaggatcttagagtgtctagggttgggcca 955  
|||||  
tobac: 105022 tcttgactcgaaatgggagcaggttgaaaaaggatcttagagtgtctagggttgggcca 105081

LCV2 : 956 ggaggggtctcttaacgccttctttttctctcatcggagttatttcacaaagacttgcc 1015  
|||||  
tobac: 105082 ggaggggtctcttaacgccttctttttctctcatcggagttatttcacaaagacttgcc 105141

LCV2 : 1016 atggtaaggaagaaggggggaacaggcacacttgagagcgcagtagacaacggagagttgt 1075  
|||||  
tobac: 105142 agggtaaggaagaaggggggaacaggcacacttgagagcgcagtagacaacggagagttgt 105201

LCV2 : 1076 atgctgcgttcgggaaggtgaatcgctcccgaaaaggaaatctattgattctctcccaat 1135  
|||||  
tobac: 105202 atgctgcgttcgggaaggtgaatcgctcccgaaaaggaaatctattgattctctcccaat 105261

LCV2 : 1136 tggttggaccgtaggtgcgatgatttacttcacgggaggtctctggttcaagtccagg 1195  
|||||  
tobac: 105262 tggttggaccgtaggtgcgatgatttacttcacgggaggtctctggttcaagtccagg 105321

LCV2 : 1196 atggcccagctgcgccagggaagaagaagaagcgtcagactccttaattaaggcgccg 1258  
|||||  
tobac: 105322 atggcccagctgcgccagggaagaagaagaagcgtcagactccttaattaaggcgccg 105370

LCV2 : 1259 catgcatgctccacttggctcgggggatataagctcagttggtagagctccgctcttgca 1318  
|||||  
tobac: 105371 catgcatgctccacttggctcgggggatataagctcagttggtagagctccgctcttgca 105430

LCV2 : 1319 attgggtcggttcgattacgggttgatgtctaattgtccaggcggtaatgatagtatct 1378  
|||||  
tobac: 105431 attgggtcggttcgattacgggttgatgtctaattgtccaggcggtaatgatagtatct 105490

LCV2 : 1379 tgtacctgaaccggtggctcactttttctaagtaatggggaagaggaccgaaacatgcc 1438  
|||||  
tobac: 105491 tgtacctgaaccggtggctcactttttctaagtaatggggaagaggaccgaaacatgcc 105550

LCV2 : 1439 ctgaaagactctactgagacaaagatgggctgtcaagaacgtcaagaacgtagaggaggt 1498  
|||||  
tobac: 105551 ctgaaagactctactgagacaaagatgggctgtcaagaacgtcaagaacgtagaggaggt 105601

LCV2 : 1499 aggatgggcagttgggtcagatctagtaggtacgtacatggacggtagttggagtcggcg 1558  
|||||  
tobac: 105602 aggatgggcagttgggtcagatctagtaggtacgtacatggacggtagttggagtcggcg 105661

LCV2 : 1559 gctctcctaggggtcccttatcggggatccctggggaagaggatcaagttggcccttgcg 1618  
|||||  
tobac: 105662 gctctcctaggggtcccttatcggggatccctggggaagaggatcaagttggcccttgcg 105721

LCV2 : 1619 aacagcttgatgcactatctcccttcaaccctttgagcgaaatgcggc-----aaaagga 1673  
|||||  
tobac: 105722 aacagcttgatgcactatctcccttcaaccctttgagcgaaatgcggc-----aaaagga 105781

## Fig. 7-3

(continued)

LCV2 : 1674    aggaaaatccatggaccgaccccatcatctccaccccgtaggaactacgagattacccca 1733  
 |||||  
 tobac: 105782    aggaaaatccatggaccgaccccatcatctccaccccgtaggaactacgagatcacccca 105841

LCV2 : 1734    aggacgccttcggcatccaggggtcacggaccgaccatagaaccctgttcaataagtga 1793  
 |||||  
 tobac: 105842    aggacgccttcggcatccaggggtcacggaccgaccatagaaccctgttcaataagtga 105901

LCV2 : 1794    acgcattagctgtccgctctcaggttgggcagtaagggtcggagaagggaatcactcat 1853  
 |||||  
 tobac: 105902    acgcattagctgtccgctctcaggttgggcagtcagggtcggagaagggaatgactcat 105961

LCV2 : 1854    tctta 1858  
 |  
 tobac: 105962    t---- 105962

LCV21859aaaccagcgttcttaaggccaaagagtcggcggaagggggaaagctctccggttcctggtttcctgtagctggatcctc  
 cggaaccacaagaatc 1955 (97 bp sequence absent in tobacco but present in spinach, Solanum  
 nigrum, Arabidopsis, Soybean, rice and wheat)

LCV2 : 1956    cttagttagaatgggattccaactcagcaccttttgagtgagattttgagaagagttgct 2015  
 |||||  
 tobac: 105963    cttagttagaatgggattccaactcagcaccttttgagtgagattttgagaagagttgct 106022

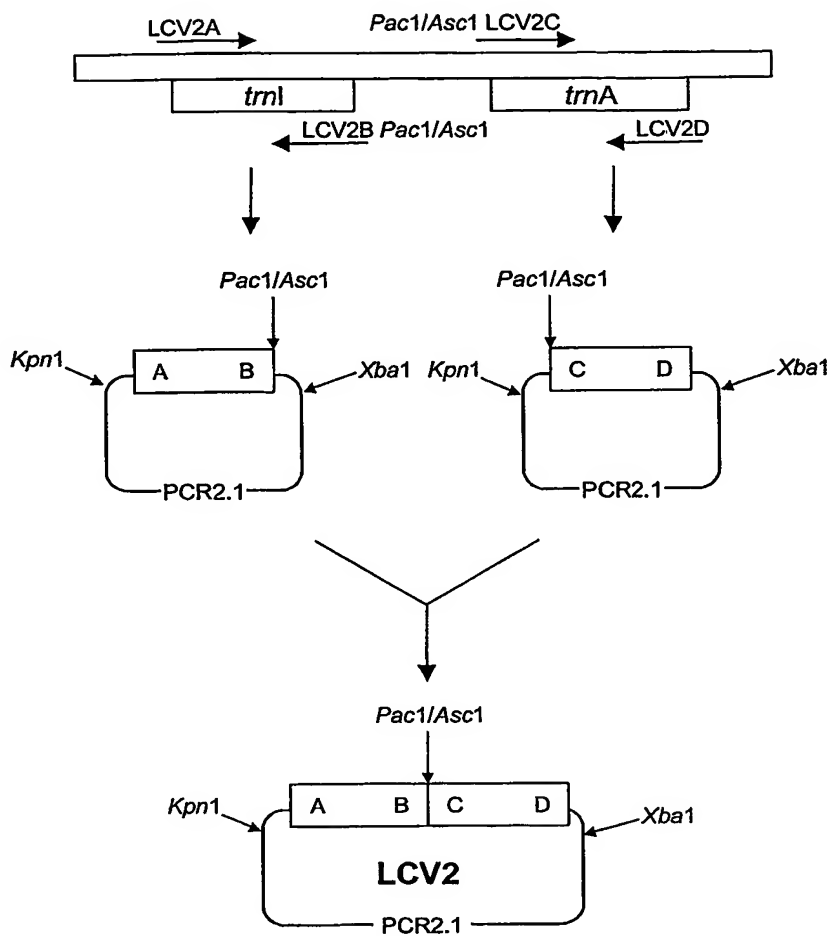
LCV2 : 2016    ctttgagagcacagtcagtgaaagtgtgaagctgtgttcgggggggagttattgtcta 2075  
 |||||  
 tobac: 106023    ctttgagagcacagtcagtgaaagtgtgaagctgtgttcgggggggagttattgtcta 106082

LCV2 : 2076    tcggtggcctctatggtagaatcagtcgggggacctgagaggcggtggtttaccctgcgg 2135  
 |||||  
 tobac: 106083    tcggtggcctctatggtagaatcagtcgggggacctgagaggcggtggtttaccctgcgg 106142

LCV2 : 2136    cggatgtcagcggttcgagtcgcttatctccaactcgtgaacttagccgatacaaaagct 2195  
 |||||  
 tobac: 106143    cggatgtcagcggttcgagtcgcttatctccaactcgtgaacttagccgatacaaaagct 106202

LCV2 : 2196    atatgacagcacccaatttttccgatttggcggttcgatctatgatttatcattcatg 2253  
 |||||  
 tobac: 106203    ttatgatagcacccaatttttccgatttggcggttcgatctatgatttatcattcatg 106260





LCV2A 5' TCGACAGTGAAGTAAGACCAAG3' (104366-104387 in TCG) (SEQ ID NO:13)  
 LCV2B 5' GGCGCGCCTTAATTAAGGAGTCAGACGCTTCTTCTATTC3' (10346-105370 in TCG)  
 (SEQ ID NO:14)  
 LCV2C 5' TTAATTAAGGCGCGCCCATGCATGCTCCACTTGGCTCGG3' (105371-105393 in TCG)  
 (SEQ ID NO:15)  
 LCV2D 5' CATGAATGATAAATCATAGATCGAAC3' (106234-106260 in TCG) (SEQ ID NO:16)

Fig. 8

## LCV1-MSK18 map (9,682bp)

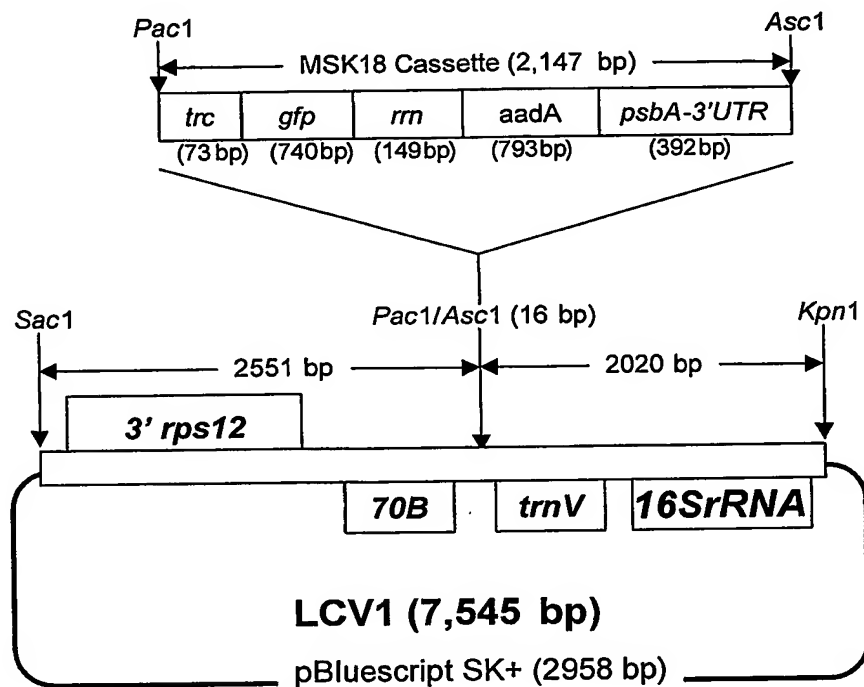


Fig. 9

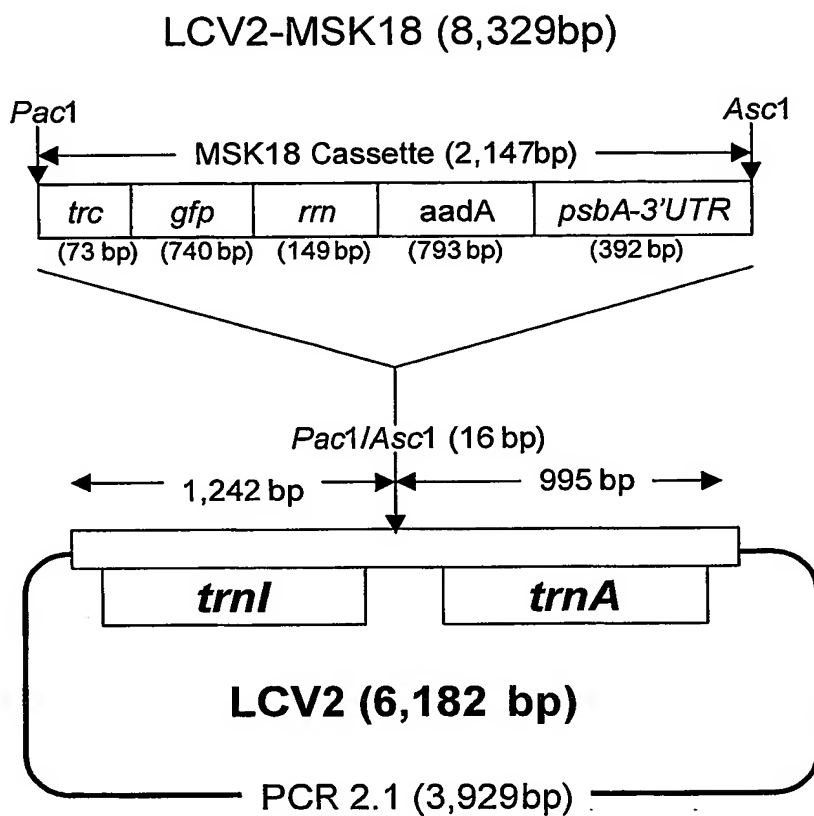
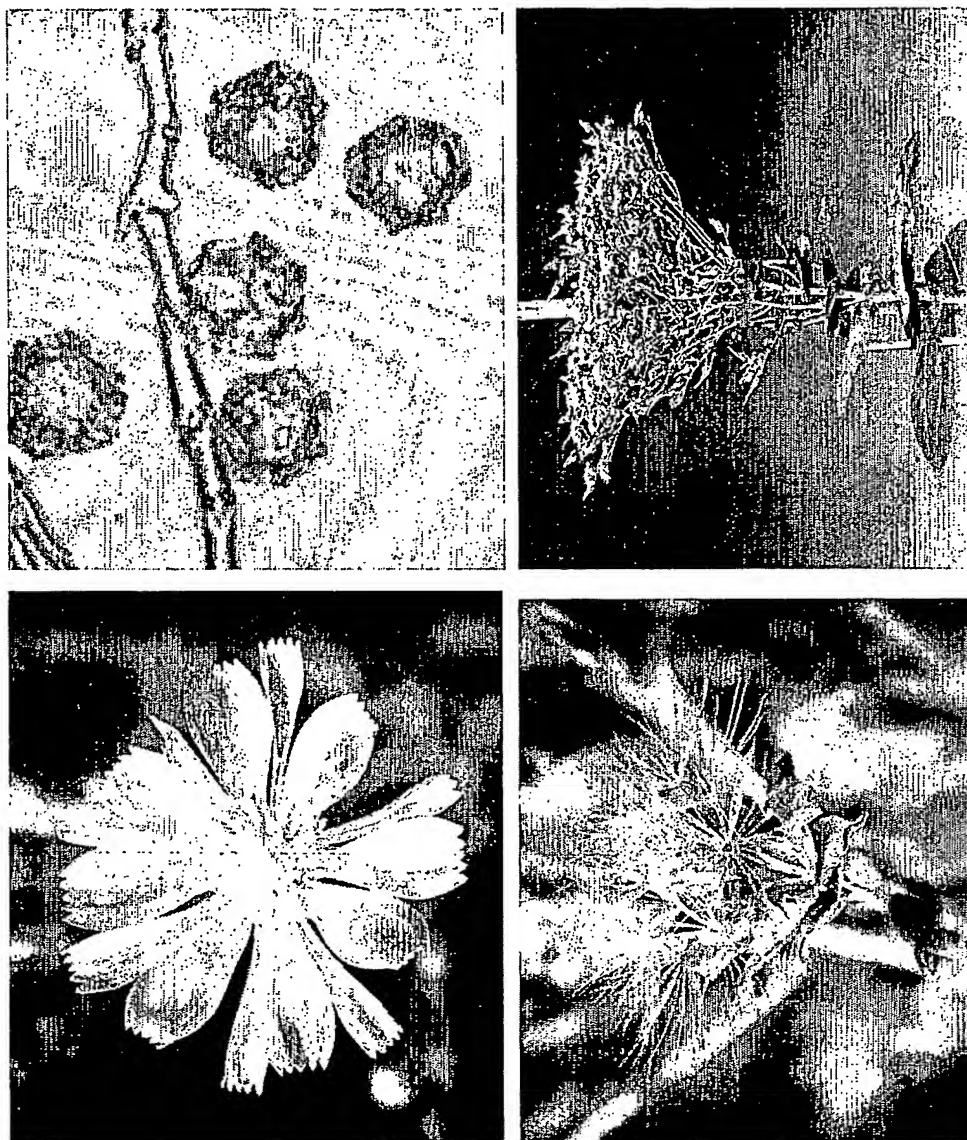
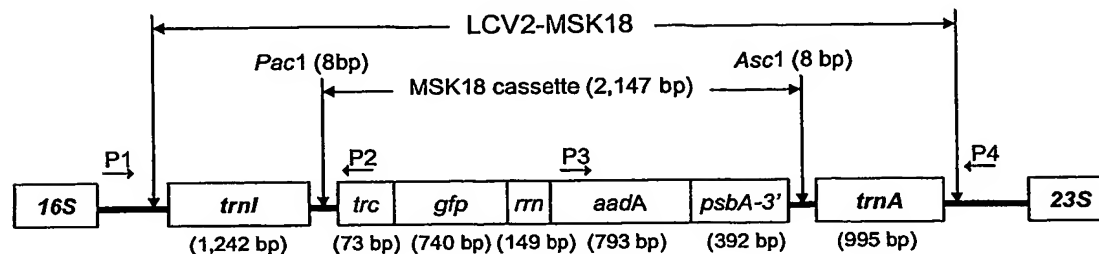


Fig. 10

Fig. 11





P1 + P2 = 1415 bp

P3 + P4 = 2006 bp

P1 + P4 = 4623 bp

P1 5'-ACTGGAAGGTGCGGCTGGAT-3' (SEQ ID NO:17)

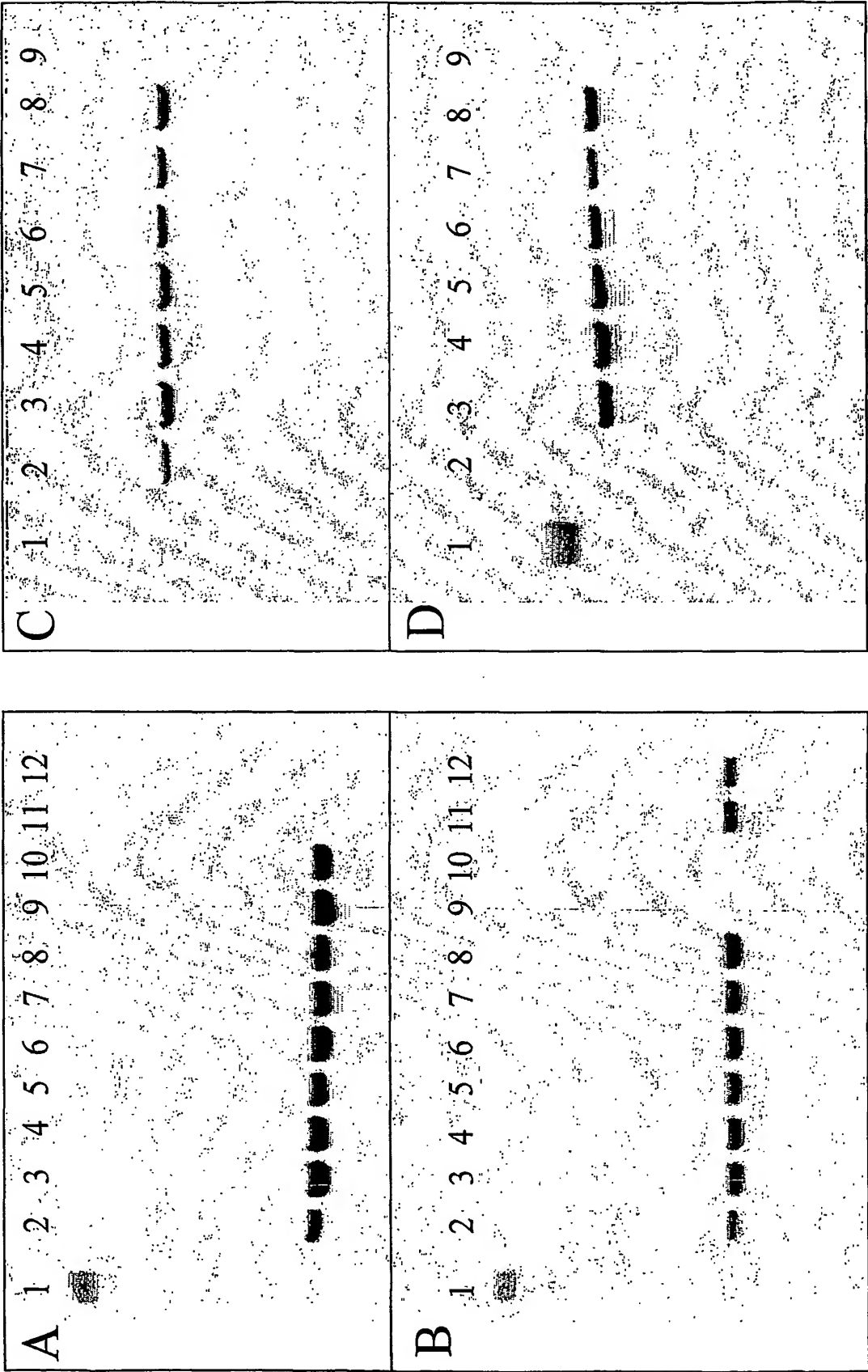
P2 5'-ACGAGCCGGATGATTAATTGTCAATTAATTAATA-3' (MSK18A comp)- (SEQ ID NO:18)

P3 5'-AAGTCACCATTGTTGTGCACG-3' (starts at 259 bp on aadA CDS) (SEQ ID NO:19)

P4 5'-CTCGCCCTTAATTTTAAGGC-3' (SEQ ID NO:20)

Fig. 12

Figure 13



## Fig. 14-1

**P1-P2 left border fragment consensus sequence (SEQ ID NO:21)**

Primer P1→

actggaagggtgcggtggatcacctccttttcagggagagctaattgcttggtgggtattttggtttgacac  
tgcttcacacccaaaaaagaaggagctacgtctgagttaaacttggagatggaagtcttcatttcgtttc

Primer LCV2A→=LCV2A left border

TCGACAGTGAAGTAAGACCAAGCTCATGAGCTTATTATCTCAGGTCGGAACAAGTTGATAGGATCCCCCTT  
TTTACGTCCCCATGCCCCCTGTGTGGCGACATGGGGGCGAAAAAGGAAAGAGAGAGATGGGGTTTCTCTC  
GCTTTTGGCATAGTGGGCCCCAGTGGGGGGCTCGCACGACGGGCTATTAGCTCAGTGGGTAGAGCGCGCC  
CCTGATAATTGCGTCGTTGTGCCTGGGCTGTGAGGGCTCTCAGCCACATGGATAGTTCAATGTGCTCATCG  
GCGCCTGACCCTGAGATGTGGATCATCCAAGGCACATTAGCATGGCGTACTCCTCCTGTTTGAACCGGGGT  
TTGAAACCAAACCTTCTCCTCAGGAGGATAGATGGGGCGATTAGGTGAGATCCAATGTAGATCCAACCTTTC  
GATTCACCTCGTGGGATCCGGGCGGTCCGGGGGGGACCACCATGGCTCCTCTCTTCTCGAGAATCCATACAT  
CCCTTATCAGTGTATGGACAGCTATCTCTCGAGCACAGGTTTAGGTTTCGGCCTCAATGGGAAAAATAAAATG  
GAGCACTTAACAACGCATCTTCACAGACCAAGAAGCTACGAGATCACCCCTTTCATTCTGGGGTGACGGAGG  
GATCATAACCATTCGAGCCTTTTTTTTTTCATGCTTTTTCCCGAGGTCTGGAGAAAGCTGAAATCAATAGGAT  
TTCCCTAATCCTCCCTTACCGAAAGGAAGAGCGTGAAATTCTTTTTCTTTCCGACGGGACCAGGAGATTG  
GATCTAGCCGTAAGAAGATGCTTGGTATAAATAACTCACTTCTTGGTCTTCGACCCCCGAGTCACTACG  
AACGCCCCCGATCAGTGCAATGGGATGTGTCTATTTATCTATCTCTTGACTCGAAATGGGAGCAGGTTTGA  
AAAAGGATCTTAGAGTGCTAGGGTTGGGCCAGGAGGGTCTCTTAACGCCTTCTTTTTTCTTCTCATCGGA  
GTTATTTTCAAAAGACTTGCCATGGTAAGGAAGAAGGGGGGAACAGGCACACTTGGAGAGCGCAGTACAAC  
GGAGAGTTGTATGCTGCGTTCGGGAAGGATGAATCGCTCCCCGAAAAGGAATCTATTGATCTCTCTCCCAATT  
GGTTGGACCGTAGGTGCGATGATTTACTTTCACGGGCGAGGTCTCTGGTTCAAGTCCAGGATGGCCAGCTG

PacI trc promoter→ ←Primer P2

CGCCAGGGAAAAGAATAGAAGAAGCGTCTGACTCC [TTAATTAA] [TTGACAATTAATCATCCGGCTCGT]

**P3-P6 left border fragment consensus sequence (SEQ ID NO:22)**

Primer P3→(aadA gene)

AAGTCACCATTGTTGTGCACGACGACATCATTCCGTGGCGTTATCCAGCTAAGCGCGAACTGCAATTTGGA  
GAATGGCAGCGCAATGACATTCTTGCAAGTATCTTCGAGCCAGCCACGATCGACATTGATCTGGCTATCTT  
GCTGACAAAAGCAAGAGAACATAGCGTTGCCCTGGTAGGTCCAGCGGCGGAGGAACCTTTGATCCGGTTC  
CTGAACAGGATCTATTTGAGGCGCTAAATGAAACCTTAACGCTATGGAACCTCGCCGCCGACTGGGCTGGC  
GATGAGCGAAATGTAGTGCTTACGTTGTCCCGCATTTGGTACAGCGCAGTAACCGGCAAAATCGCGCCGAA  
GGATGTCGCTGCCGACTGGGCAATGGAGCGCCTGCCGGCCAGTATCAGCCCGTCATACTTGAAGCTAGAC  
AGGCTTATCTTGGACAAGAAGAAGATCGCTTGGCCTCGCGCGCAGATCAGTTGGAAGAATTGTCCACTAC

aadA stop/psbA 3' UTR→

GTGAAAGGCGAGATCACCAGGTAGTCGGCAAAATATGTCTAGAGCGATCCTGGCCTAGTCTATAGGAGGT  
TTTGAAGAAGAGGAGCAGTAATCATTTTCTTGTCTATCAAGAGGGTGCTATTGCTCCTTTCTTTTTTTC  
TTTTTATTTATTTACTAGTATTTTACTTACATAGACTTTTTGTTTACATTATAGAAAAAGAAGGAGAGGT  
TATTTTCTTGCAATTTATTCATGATTGAGTATCTATTTTGATTTTGTATTTGTTTAAATTTGTAGAAATAG  
AACTTGTTTCTCTTCTTGCTAATGTTACTATATCTTTTTTGATTTTTTTTCCAAAAAATAATCAATTTT  
GACTTCTTCTTATCTCTTATCTTTGAATATCTTATCTTTGAAATAATAATATCATTGAAATAAGAAAGA

AscI

trnA gene→

AGAGCTATATTCGA [GGCGCGCC] CATGCATGCTCCACTTGGCTCGGGGGATATAGCTCAGTTGGTAGA  
GCTCCGCTCTTGCAATTGGGTGCTTGCATTTACGGGTGGAGTGCTAATGTCCAGGCGGTAATGATAGTA  
TCTTGTACCTGAACCGGTGGCTCATTTTTCTAAGTAATGGGGAAGAGGACCGAAACATGCCACTGAAAGA  
CTCTACTGAGACAAAGATGGGCTGTCAAGAACGTCAAGAACGTAGAGGAGGTAGGATGGGCAGTTGGTCAG  
ATCTAGTATGGATCGTACATGGACGGTAGTTGGAGTCGGCGGCTCTCCTAGGGTTCCCTTATCGGGGATCC

## Fig. 14-2

(continued)

CTGGGGAAGAGGATCAAGTTGGCCCTTGCGAACAGCTTGATGCACTATCTCCCTTCAACCCTTTGAGCGAA  
ATGCGGCAAAAGGAAGGAAAATCCATGGACCGACCCCATCATCTCCACCCCGTAGGAACTACGAGATTACC  
CCAAGGACGCCTTCGGCATCCAGGGGTCACGGACCGACCATAGAACCCTGTTCAATAAGTGGAACGCATTA  
GCTGTCCGCTCTCAGGTTGGGCAGTAAGGGTCGGAGAAGGGCAATCACTCATTCTTAAAAACCAGCGTTCTT  
AAGGCCAAAGAGTCGGCGGAAAAAGGGGGGAAAGCTCTCCGTTCTGGTTTCCTGTAGCTGGATCCTCCGGA  
ACCACAAGAATCCTTAGTTAGAATGGGATTCCAACCTCAGCACCTTTTGAGTGAGATTTTGAGAAGAGTTGC  
TCTTTGGAGAGCACAGTACGATGAAAGTTGTAAGCTGTGTTTCGGGGGGGAGTTATTGTCTATCGTTGGCCT  
CTATGGTAGAATCAGTCGGGGGACCTGAGAGGCGGTGTTTACCCTGCGGCGGATGTCAGCGGTTTCGAGTC

*trnA* end

CGCTTATCTCCAACCTCGTGAACCTTAGCCGATACAAAGCTATATGACAGCACCCAATTTTCCGATTTGGCG

←Primer LCV2D = RB of LCV2

gttcgatctatgatttatcattcatggacgttgataagatccatccatttagcagcaccttaggatggcat

←Primer P6

agccttaaaattaagggcgag



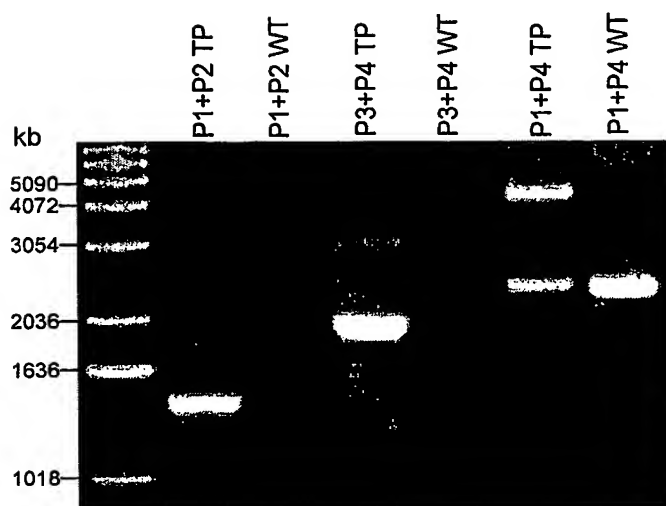


Fig. 15

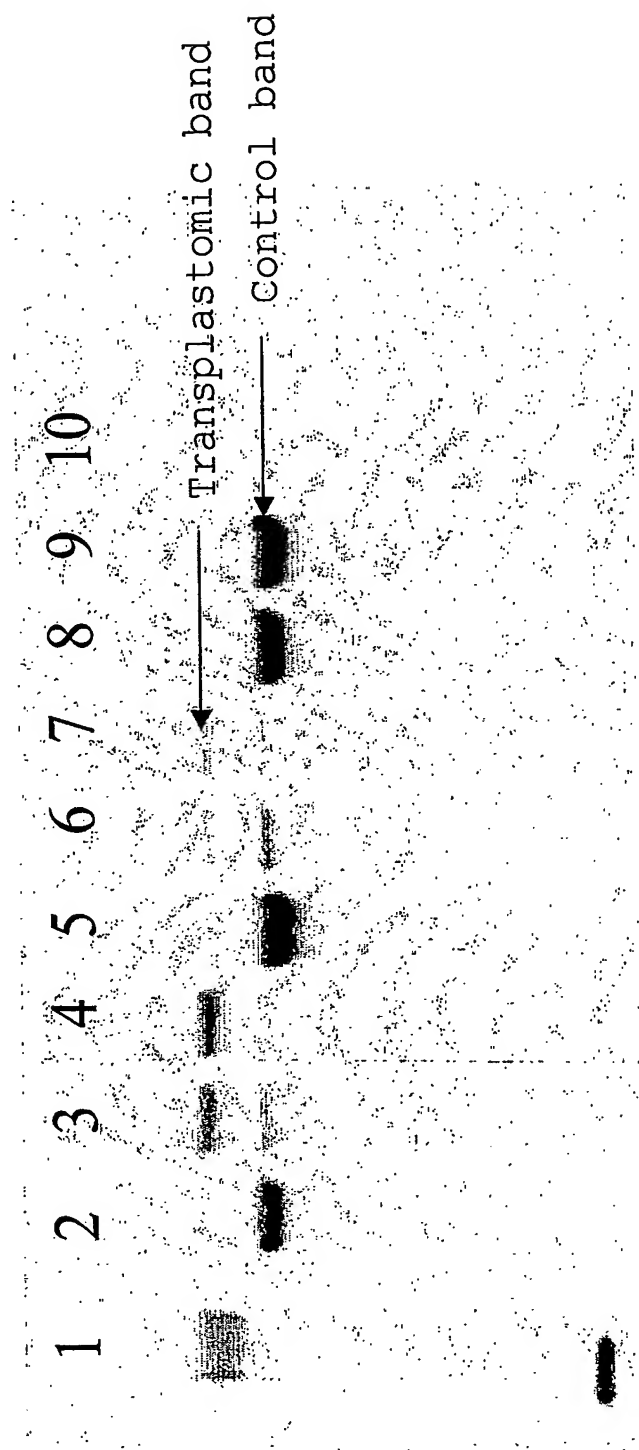


Fig. 16

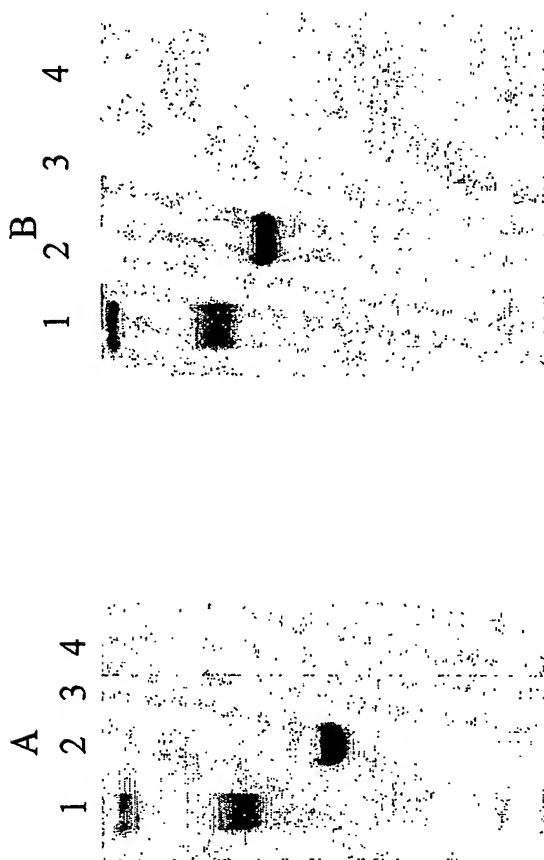
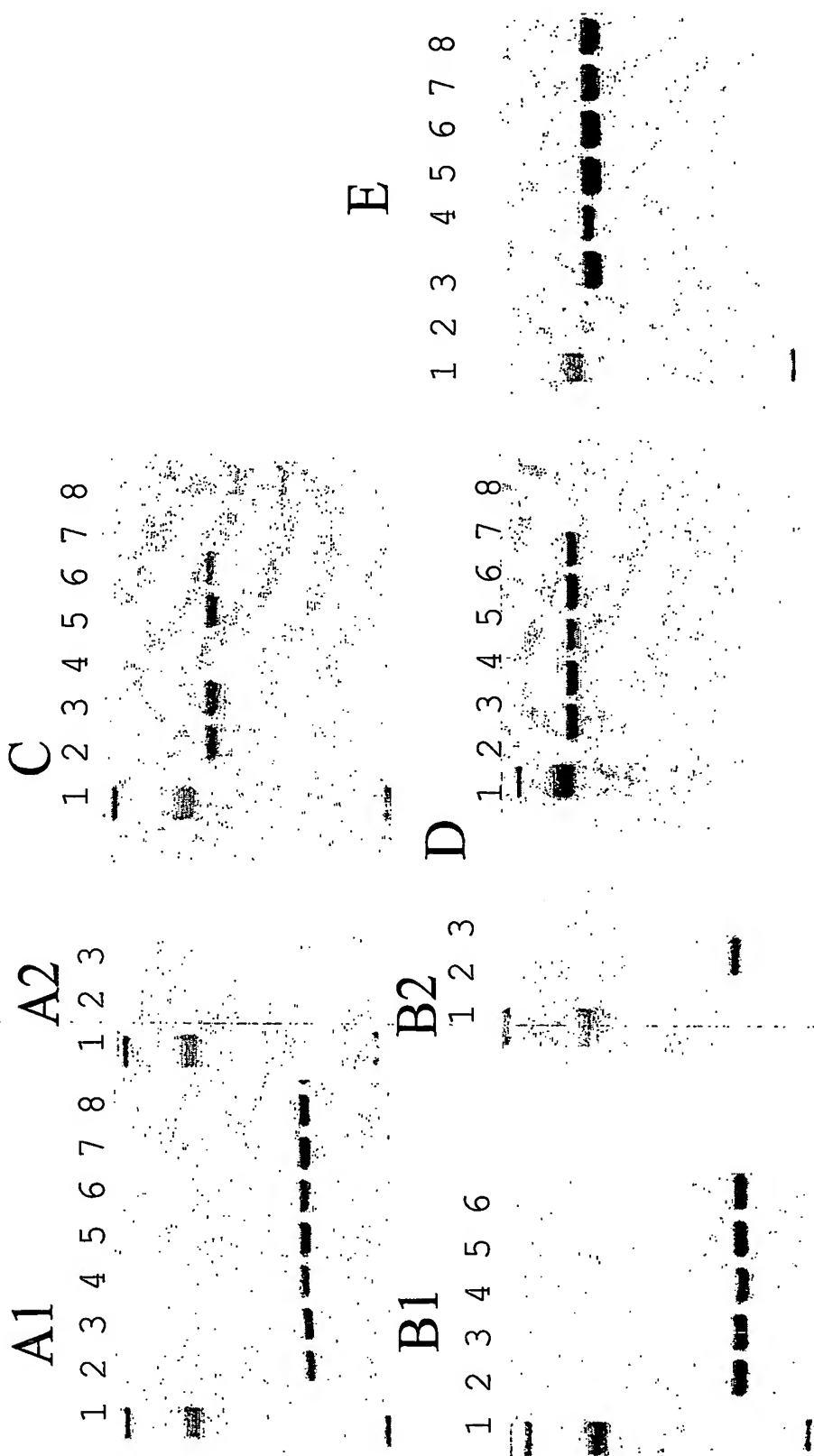


Fig. 17

Fig. 18



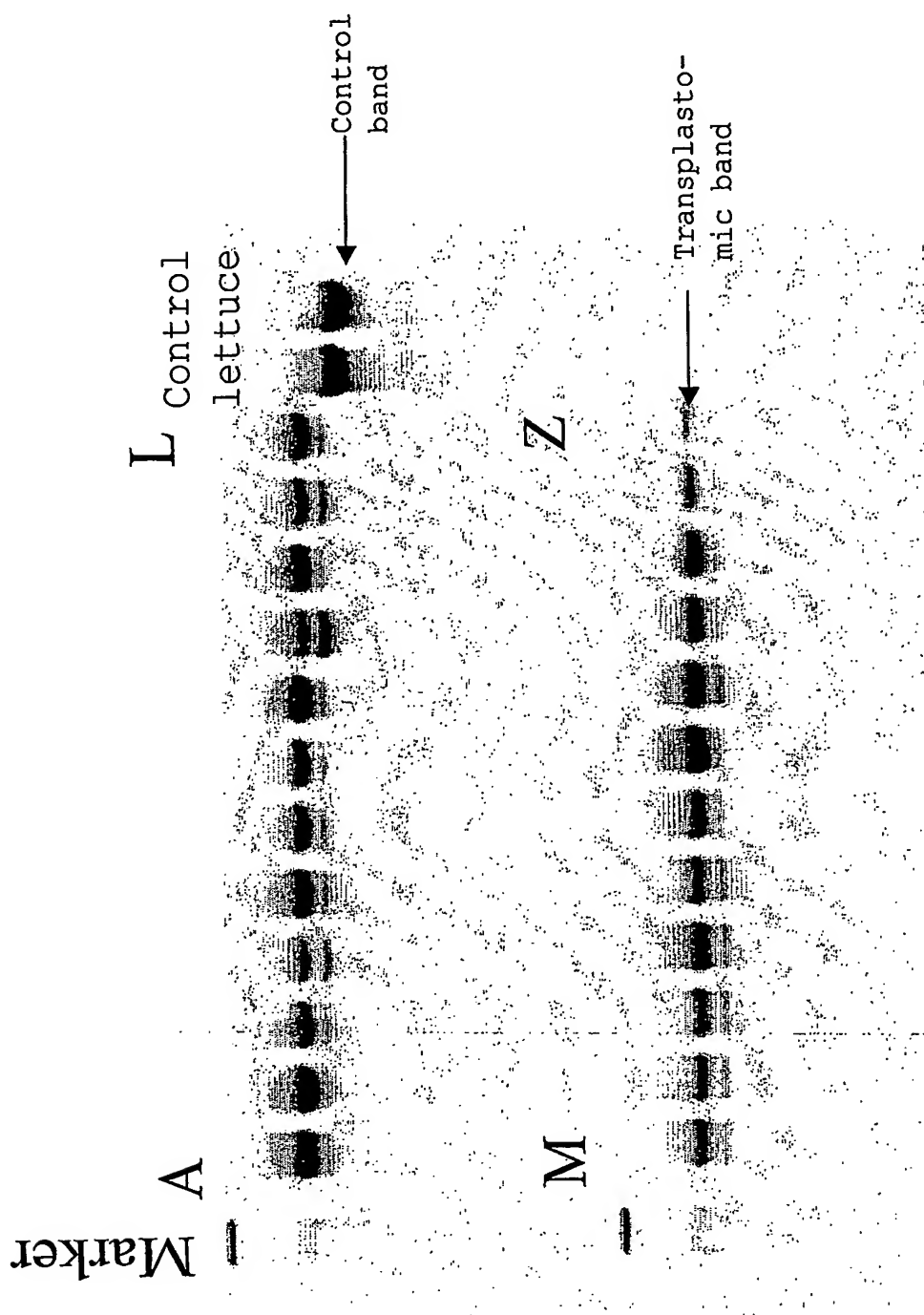


Fig. 19

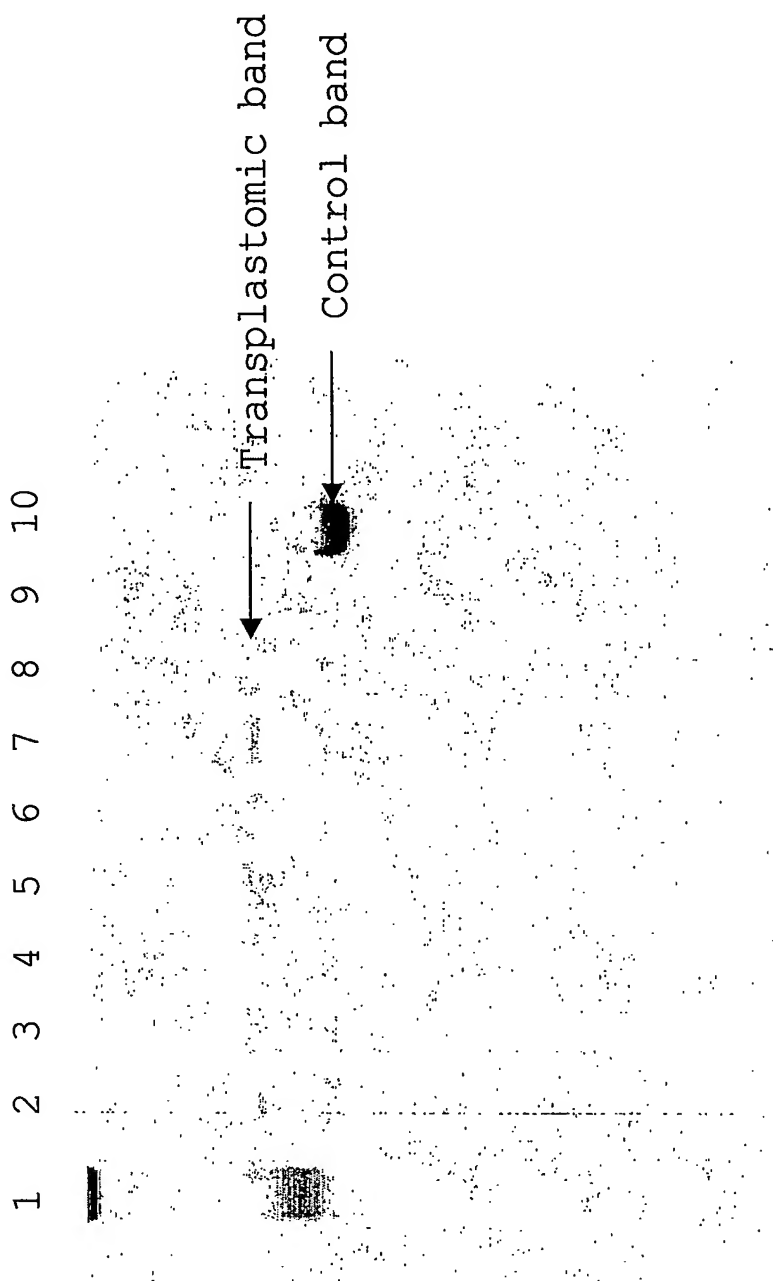
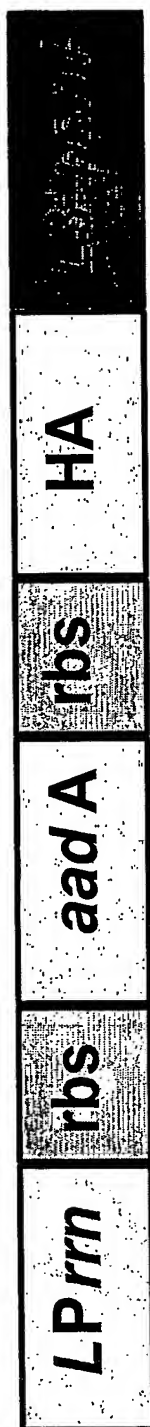


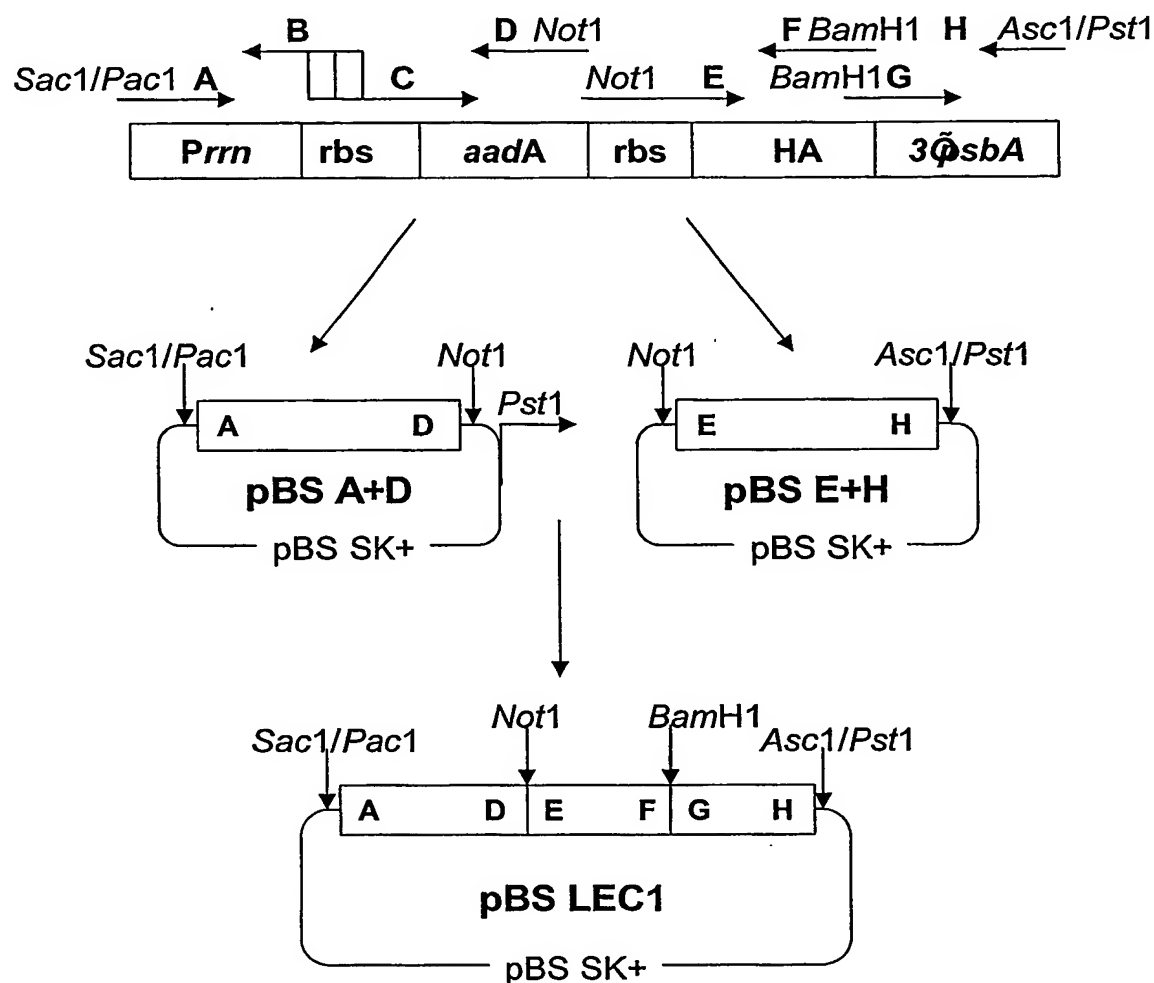
Fig. 20

Fig. 21

LEC1 (dicistronic)



## LEC1 construction

List of PCR primers used in LEC1 construction:

LEC1 A	tcg agc tct taa tta agc tac ccc gcc gtg att gaa tga gaa t (SEQ ID NO:23)
LEC1 B	aaa tcc ctc cct aca act gta tcc aag cgc ttc gta ttc gc (SEQ ID NO:24)
LEC1 C	ggt gta ggg agg gat tta tgg cag aag cgg tga tgc ccg aa (SEQ ID NO:25)
LEC1 D	tcg cgg ccg ctt att tgc cga cta cct tgg tga t (SEQ ID NO:26)
LEC1 E	tcg cgg ccg cag ttg tag gga ggg att tat gca aaa act tcc cgg aaa tga caa (SEQ ID NO:27)
LEC1 F	gga tcc tta gta tcc tga ctt cag ctc aac (SEQ ID NO:28)
LEC1 G	aac att taa gga tcc gac ttt ggt ctt att gta att gta tag (SEQ ID NO:29)
LEC1 H	atc tgc agg gcg gcc atc cac ttg gct aca tcc gcc (SEQ ID NO:30)

Fig. 22